

I claim:

- 1 1. A camera comprising:
 2 a main body supporting a taking lens and a closeable exposure aperture; the main body
 3 defining a cartridge chamber and a film chamber disposed on opposite sides of the exposure
 4 aperture, the film chamber being defined at an upper end by an upper wall of the main body and
 5 at a lower end by an endcap assembly, wherein the film chamber is sized to selectively receive
 6 one of a roll of film and a secondary cassette housing a roll of film light-tightly therein;
 7 the endcap assembly including a shutter support plate with an aperture extending
 8 therethrough, the endcap assembly further including a shutter blade movably mounted on the
 9 shutter support plate, wherein the shutter blade is movable between a first position, in which the
 10 aperture is substantially closed, and a second position, in which the aperture is substantially
 11 unobstructed, whereby a shaft can pass through the endcap assembly and into the film chamber
 12 for winding of film into the film chamber; and
 13 a back cover operatively engaging the main body to enclose the chambers light-tightly
 14 therein.
- 1 2. The camera of claim 1 wherein the endcap assembly further includes a second shutter
 2 support plate with an aperture extending therethrough, the apertures in the shutter support plate
 3 and the second shutter support plate being substantially aligned, whereby a shaft can pass
 4 simultaneously through the apertures in both shutter support plates of the endcap assembly and
 5 into the film chamber for winding of film into the film chamber.
- 1 3. The camera of claim 2 wherein the shutter blade is disposed between the two shutter
 2 support plates such that, in the first position, both apertures are substantially closed and, in the
 3 second position, both apertures are substantially unobstructed.
- 1 4. The camera of claim 2 wherein the endcap assembly further includes a spring for biasing
 2 the shutter blade into the first position.
- 1 5. The camera of claim 2 wherein at least a portion of one of the shutter support plates of
 2 the endcap assembly is formed with the main body.

- 1 6. The camera of claim 2 wherein at least a portion of one of the shutter support plates of
2 the endcap assembly is formed with the back cover.
- 1 7. The camera of claim 2 wherein one of the shutter support plates of the endcap assembly
2 is made of at least two pieces, wherein one piece is formed with the main body and another piece
3 is formed with the back cover, whereby when the back cover is in the closed position, the first
4 and second piece engage to form one of the shutter support plates.
- 1 8. The camera of claim 1 wherein the endcap assembly further includes a spring for biasing
2 the shutter blade into the first position.
- 1 9. The camera of claim 1 wherein the shutter support plate of the endcap assembly includes
2 a collar substantially peripherally surrounding the aperture in the shutter support plate and
3 extending therefrom.
- 1 10. The camera of claim 1 wherein at least a portion of the shutter support plate of the endcap
2 assembly is formed with the main body.
- 1 11. The camera of claim 1 wherein at least a portion of the shutter support plate of the endcap
2 assembly is formed with the back cover.
- 1 12. The camera of claim 1 wherein the endcap assembly is removably mounted on the main
2 body.
- 1 13. The camera of claim 12 wherein the main casing provides a cradle at the lower end of the
2 film chamber on which the endcap assembly can be mounted.
- 1 14. The camera of claim 1 wherein the cartridge chamber is sized to selectively receive one
2 of a 35 millimeter film cartridge and a primary cassette of a DCS film system.

1 15. The camera of claim 14 further including one of a 35 millimeter film cartridge and a
2 primary cartridge of a DCS film system disposed in the cartridge chamber, the cartridge
3 containing at least one end of a roll of film light-tightly therein.

1 16. The camera of claim 15 wherein at least a portion of the film extending from the 35
2 millimeter film cartridge is wound in a roll in the film chamber.

1 17. The camera of claim 16 wherein the roll is housed light-tightly within a secondary
2 cassette.

1 18. The camera of claim 17 wherein a lower side of the secondary cassette contacts the
2 endcap assembly of the film chamber.

1 19. The camera of claim 17 wherein a lower side of the secondary cassette is substantially
2 adjacent to the endcap assembly of the film chamber.

1 20. The camera of claim 17 wherein the secondary cassette is spaced from the endcap
2 assembly of the film chamber.

1 21. The camera of claim 1 wherein the upper wall and an inner face of the endcap assembly
2 of the film chamber are substantially smooth.

1 22. The camera of claim 21 wherein the upper wall and the inner face of the endcap assembly
2 of the film chamber each define a plane, wherein the planes are spaced at least about 36.7
3 millimeters apart.

1 23. The camera of claim 21 wherein the upper wall and the inner face of the endcap assembly
2 of the film chamber each define a plane, wherein the planes are spaced at least about 35.2
3 millimeters apart.

1 24. A method of loading film into a camera assembly comprising the steps of:

- 2 (a) providing a camera assembly having a main body and a back cover, the back
3 cover operatively engaging the main body so as to form in part a light-tight film casing;
4 the light-tight film casing including a cartridge chamber and a film chamber, each
5 of the chambers being defined in part by the main body and the back cover, the film chamber
6 being defined at an upper end by an upper wall of the main body and at a lower end by at least an
7 endcap assembly, wherein the chambers are disposed on opposite sides of a taking lens
8 supported on the main body,
9 the endcap assembly including a plate with an aperture extending therethrough
10 and with a shutter blade mounted thereon, wherein the shutter blade is movable between a first
11 position, in which the aperture is substantially closed, and a second position, in which the
12 aperture is substantially unobstructed;
- 13 (b) providing a substantially light-tight sleeve having a proximal end and a distal end
14 and a longitudinal axis extending therebetween;
- 15 (c) providing a winding rod having a proximal end and a distal end, at least the distal
16 end of the winding rod being substantially light-tightly extending into the sleeve from the
17 proximal end of the sleeve, the winding rod being movable within the sleeve substantially along
18 the longitudinal axis of the sleeve;
- 19 (d) placing the distal end of the sleeve light-tightly about the aperture in the endcap
20 assembly;
- 21 (e) moving the shutter blade into the second position;
- 22 (f) moving the distal end of the winding rod through the sleeve and the aperture in
23 the endcap assembly, wherein at least a portion of the distal end of the winding rod extends into
24 the film chamber of the camera assembly;
- 25 (g) placing a film cartridge into the cartridge chamber of the camera assembly;
- 26 (h) attaching a leader portion of film extending from the film cartridge to the winding
27 rod;
- 28 (i) operatively engaging the back cover with the main body so as to light-tightly
29 enclose the film chamber and the cartridge chamber;
- 30 (j) turning the winding rod such that at least a portion of film from the cartridge is
31 wound into a roll in the film chamber;

32 (k) disengaging the winding rod from the leader portion of film and retracting the
33 winding rod from the film chamber and the endcap assembly; and

34 (l) moving the shutter blade into the first position.

1 25. The method of claim 24 wherein the shutter blade is biased into the first position,
2 whereby the step of moving the shutter blade into the first position occurs because of the bias
3 once the winding rod is retracted from the endcap assembly.

1 26. The method of claim 24 wherein the endcap assembly further includes a second shutter
2 support plate with an aperture extending therethrough, the apertures in the shutter support plate
3 and the second shutter support plate being substantially aligned such that the winding rod can
4 simultaneously pass through the apertures in both shutter support plates of the endcap assembly
5 and into the film chamber, wherein the shutter blade is enclosed between the two shutter support
6 plates such that, in the first position, both apertures are substantially closed and, in the second
7 position, both apertures are substantially unobstructed.

1 27. The method of claim 26 wherein the shutter blade is biased into the first position,
2 whereby the step of moving the shutter moving the shutter blade into the first position occurs
3 because of the bias once the winding rod is retracted from the endcap assembly.

1 28. The method of claim 24 wherein the shutter support plate includes a collar substantially
2 peripherally surrounding the aperture in the shutter support plate and extending therefrom, and
3 the step of placing the distal end of the sleeve light-tightly about the aperture in the endcap
4 assembly includes mounting the distal end of the sleeve to the collar.

1 29. The method of claim 28 further including the step of inserting a plug into the collar.

1 30. The method of claim 24 wherein the turning step is performed by one of hand or electric
2 motor.

1 31. The method of claim 24 further including the step of disengaging a film advance wheel
2 on the main body so as to allow the film to be wound out of the film cartridge and into the film
3 chamber.

1 32. The method of claim 24 wherein the endcap assembly is removably mounted on the main
2 body, and further including the step of mounting the endcap assembly onto the main body.

1 33. A method of loading film into a camera assembly comprising the steps of:

2 (a) providing a camera assembly having a main body and a back cover, the back
3 cover operatively engaging the main body so as to form in part a light-tight film casing;

4 the light-tight film casing including a cartridge chamber and a film chamber, each
5 of the chambers being defined by at least the main body section and the back cover section, the
6 film chamber being defined at an upper end by an upper wall of the main body and at a lower
7 end by an endcap assembly, wherein the chambers are disposed on opposite sides of a taking lens
8 supported on the main body;

9 the endcap assembly including at least a shutter support plate with an aperture
10 extending therethrough and with a shutter blade mounted thereon, the shutter blade being
11 movable between a first position, in which the aperture is substantially closed, and a second
12 position, in which the aperture is substantially unobstructed;

13 (b) providing a DCS film system including film, a primary cassette and a secondary
14 cassette, wherein at least a first portion of the film is housed within the primary cassette and a
15 second portion of the film is housed within the secondary cassette;

16 (c) inserting the primary cassette of a DCS film system into the cartridge chamber;

17 (d) inserting the secondary cassette of the DCS film system into the film chamber
18 between the upper wall and the endcap assembly;

19 (e) operatively engaging the back cover and the main body so as to form a light-tight
20 film casing, wherein the DCS film system is enclosed light-tightly therein.

1 34. The method of claim 33 wherein the film chamber is sized such that, when the secondary
2 cassette is inserted in the film chamber, the secondary cassette contacts an inner face of the
3 endcap assembly of the film chamber.

1 35. The method of claim 33 wherein the film chamber is sized such that, when the secondary
2 cassette is inserted in the film chamber, the secondary cassette is substantially adjacent to an
3 inner face of the endcap assembly of the film chamber.

1 36. The method of claim 33 wherein the film chamber is sized such that, when the secondary
2 cassette is inserted in the film chamber, the secondary cassette is spaced from an inner face of the
3 endcap assembly of the film chamber.

1 37. A camera comprising:

2 a main body supporting a taking lens and a closeable exposure aperture; the main body
3 defining a cartridge chamber and a film chamber disposed on opposite sides of the exposure
4 aperture, the film chamber being defined at an upper end by an upper wall of the main body and
5 at a lower end by an endcap assembly, wherein the upper wall defines an upper plane and an
6 inner face of the endcap assembly defines a lower plane, wherein the upper and lower planes are
7 spaced from about 36.7 millimeters to about 37.7 millimeters apart;

8 the endcap assembly including a shutter support plate with an aperture extending
9 therethrough, the endcap assembly further including a shutter blade movably mounted on the
10 shutter support plate, wherein the shutter blade is movable between a first position, in which the
11 aperture is substantially closed, and a second position, in which the aperture is substantially
12 unobstructed, whereby a shaft can pass through the endcap assembly and into the film chamber
13 for winding of film in the film chamber; and

14 a back cover operatively engaging the main body to enclose the chambers light-tightly
15 therein.

1 38. The camera of claim 37 wherein the endcap assembly further includes a second shutter
2 support plate with an aperture extending therethrough, the apertures in the shutter support plate
3 and the second shutter support plate being substantially aligned, whereby a shaft can
4 simultaneously pass through the apertures in both shutter support plates of the endcap assembly
5 and into the film chamber for winding of film into the film chamber.

1 39. The camera of claim 38 wherein the shutter blade is disposed between the two shutter
2 support plates such that, in the first position, both apertures are substantially closed and, in the
3 second position, both apertures are substantially unobstructed.

1 40. The camera of claim 38 wherein the endcap assembly further includes a spring for
2 biasing the shutter blade into the first position.

1 41. The camera of claim 38 wherein at least a portion of one of the shutter support plates of
2 the endcap assembly is formed with the main body.

1 42. The camera of claim 38 wherein at least a portion of one of the shutter support plates of
2 the endcap assembly is formed with the back cover.

1 43. The camera of claim 38 wherein one of the shutter support plates of the endcap assembly
2 is made of at least two pieces, wherein one piece is formed with the main body and another piece
3 is formed with the back cover, whereby when the back cover is mounted to the main body, the
4 first and second piece engage to form one of the shutter support plates.

1 44. The camera of claim 37 wherein the endcap assembly further includes a spring for
2 biasing the shutter blade into the first position.

1 45. The camera of claim 37 wherein the shutter support plate of the endcap assembly
2 includes a collar substantially peripherally surrounding the aperture in the shutter support plate
3 and extending therefrom.

1 46. The camera of claim 37 wherein at least a portion of the shutter support plate of the
2 endcap assembly is formed with the main body.

1 47. The camera of claim 37 wherein at least a portion of the shutter support plate of the
2 endcap assembly is formed with the back cover.

1 48. The camera of claim 37 wherein the endcap assembly is removably mounted on the main
2 body.

1 49. The camera of claim 48 wherein the main body provides a cradle at the lower end of the
2 film chamber on which the endcap assembly can be mounted.

1 50. The camera of claim 37 wherein the upper wall and the lower wall of the film chamber
2 are substantially smooth.

1 51. In a camera having a main body supporting a taking lens and a closeable exposure
2 aperture, the main body defining a cartridge chamber and a film chamber disposed on opposite
3 sides of the exposure aperture, the film chamber being defined at an upper end by an upper wall
4 of the main body and at a lower end by an endcap assembly having a movable shutter blade
5 mounted to a shutter support plate having a closeable aperture, and a back cover operatively
6 engaging the main casing to enclose the chambers light-tightly therein, the improvement
7 comprising:
8 the film chamber being sized between the upper wall and the endcap assembly to
9 selectively receive one of a roll of film and a secondary cassette housing a roll of film light-
10 tightly therein.